Amendment to the Claims:

1. (Currently Amended) A ~~Scintillation~~ scintillation layer for a PET-detector with a curved internal surface and/or a curved outer surface, comprising a plurality of scintillation elements, each having a curved inner surface, ~~that are~~ the scintillation elements being joined together with minimal gaps between neighboring scintillation elements and ~~that are~~ being oriented towards [[the]] a centre of curvature of the scintillation layer curved surface.

2. (Currently Amended) The scintillation layer according to claim 1, wherein [[it]] the inner surface is cylindrically curved and ~~that it comprises~~ the scintillation elements ~~having~~ have the form of a truncated wedge.

3. (Currently Amended) The scintillation layer according to claim 1, wherein the inner surface [[it]] is curved in an ellipsoidal way and ~~that it comprises~~ the scintillation elements ~~having~~ have the form of a truncated pyramid.

4. (Currently Amended) The scintillation layer according to claim 1, wherein the gaps between neighbouring scintillation elements are filled with a reflecting material.

5. (Currently Amended) A PET-detector with a scintillation layer, the scintillation layer having a curved internal surface and/or a curved outer surface and comprising a plurality of scintillation elements each having curved inner surface, ~~that are~~ the scintillation elements being joined together with minimal gaps between neighboring scintillation elements and ~~that are~~ being oriented towards [[the]] a centre of curvature of the scintillation layer curved surface.

6. (Currently Amended) The PET-detector according to claim 5, wherein the scintillation layer is cylindrically curved and comprises scintillation elements each having the form of a truncated wedge ~~designed according to claim 2~~.

7. (Currently Amended) A method for the production of a scintillation layer for a PET-detector comprising joining a plurality of scintillation elements with minimal gaps, the scintillation elements having curved inner surfaces and being shaped in such a way that the resulting scintillation layer is curved and orienting the scintillation elements towards [[the]] a centre of curvature of the scintillation layer.

8. (Currently Amended) The method according to claim 7, wherein the resulting scintillation layer is cylindrically curved and comprises scintillation elements having the form of a truncated wedge ~~designed according to claim 2~~.

9. (Previously Presented) The method according to claim 7, wherein the scintillation elements are cut from scintillation crystals.

10. (Previously Presented) The method according to claim 7, wherein the scintillation elements are produced by press-forming of ceramic scintillation materials.

11. (Currently Amended) An imaging detector comprising:

a plurality of cuboid-shaped scintillation elements that are joined together to form a ~~substantially gapless~~ scintillation layer with a substantially continuous ~~curved~~ detection surface;

a plurality of wedge-shaped scintillation elements positioned in tapered gaps between neighboring pairs of the cuboid-shaped scintillation elements; and

one or more ~~photodection~~ photodetection elements that sense light photons generated by the scintillation elements.

12. (Previously Presented) The imaging detector of claim 11, wherein the scintillation elements are comprised of GSO, LSO, LYSO, LuAG, $LaBr_3$ or a combination of any such materials.

13. (Currently Amended) The imaging detector of claim 11, wherein each scintillation element [[as]] has a depth and a width that varies with the depth.

14. (Currently Amended) The imaging detector of claim 13, wherein the widths of each of the scintillation elements are substantially the same for any given scintillation element depth.

15. (Previously Presented) The imaging detector of claim 11, wherein the scintillation layer includes a substantially continuous curved outer surface.

16. (New) The scintillation layer according to claim 1, wherein the inner surfaces of the scintillation elements are concavely curved relative to the center of curvature.

17. (New) The PET-detector according to claim 5, wherein the inner surfaces of the scintillation elements are concavely spherically curved to define a spherical surface segment around the center of curvature.

18. (New) The method according to claim 7, wherein the inner surfaces of the scintillation elements are concavely curved relative to the center of curvature.

19. (New) The method according to claim 18, scintillation elements are produced by press-forming a ceramic scintillation material comprising lutetium aluminum garnet (LuAG).

20. (New) The imaging detector according to claim 11, wherein the inner surfaces of the cuboid-shaped scintillation elements are concavely curved relative to a center of curvature of the detection surface.